DOCUMENT RESUME

ED 198 169 TM 810 137

AUTHOR Elsworth, Gerald R.; Coulter, Frank
TITLE Aspiration and Attainment: The Measurement of Professional Self Perception in Student Teachers. Occasional Paper No. 11.
INSTITUTION Australian Council for Educational Research, Hawthorn.
PUB DATE Aug 77
NOTE 87p.

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Attitude Change; *Evaluation Criteria; Factor Structure; Foreign Countries; Higher Education; *Self Concept Measures; *Semantic Differential; *Student Teachers; *Teacher Evaluation; *Test Construction; Test Reliability; Test Validity
IDENTIFIERS Australia (Queensland); *Original Semantic Differential (Elsworth et al); *Professional Self Perception (Elsworth et al)

ABSTRACT

This monograph reports the development of a semantic differential designed to measure professional self perception in student teachers. Seven scales were identified by factor analysis of the responses of 396 student teachers to 56 adjectival pairs used to rate the concepts "Myself," "Myself as I would like to be," "Myself as a teacher," and "The teacher I would like to be." The seven scales measure self perception along the dimensions of creativity, orderliness, warmth-supportiveness, satisfaction, clarity, energy-enthusiasm and non-conformity. Selection of items for the scales involved consideration of possible concept-scale and subject-scale interactions. Reliability estimates are reported. Construct validity is examined from the viewpoint of predicted systematic differences in self perception between male and female student teachers, and primary and secondary student teachers. Examples of the uses of the scales in evaluative research in teacher education are described. Two instruments, the Original Semantic Differential and the Professional Self Perception Questionnaire, are included as appendices. (Author/RL)

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Aspiration and Attainment

Gerald R. Elsworth
Frank Coulter

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TM 870 131

Occasional Paper No.11 - August 1977

ASPIRATION AND ATTAINMENT

ASPIRATION AND ATTAINMENT
: the measurement of professional self perception in student teachers

by

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Hawthorn 3122, Victoria

Published by
The Australian Council for Educational Research Limited,
Frederick Street, Hawthorn 3122, Victoria, in conjunction
with State College of Victoria at Melbourne and the
Department of Education, University of Western Australia.
Printed and bound by
Brown Prior Anderson,
5 Evans Street, Burwood 3125, Victoria.

National Library of Australia Cataloguing-in-Publication data.

Elsworth, Gerald R.
Aspiration and Attainment: the measurement of professional
self perception in student teachers.

(Australian Council for Educational Research.
Occasional paper ; no. 11).
ISBN 0 85563 160 0.

1. Self perception - Testing. I. Coulter,
Frank, joint author. II. Title. (Series).

153.7

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evaluation studies.

ABSTRACT

This monograph reports the development of a semantic differential designed to measure changes in self perception in student teachers. It is asserted that such changes provide evaluative data concerning the impact of teacher education programs on important dimensions of self view. Two reasons are advanced for the importance of self perception as an evaluative criterion. First, self perception interacts with and affects behaviour. Second, the degree of congruence between actual and aspirational self perception is an index of adjustment; that is, it is one measure of the extent to which student teachers perceive that they are achieving important aspirations, or are being thwarted and frustrated.

The instrument was developed from the responses of 396 male and female student teachers drawn from the third year of primary and secondary teacher education programs in Queensland. These respondents used an initial item pool of 56 adjectival pairs to rate four concepts. The concepts were 'Myself', 'Myself as I would like to be', 'Myself as a teacher' and 'The teacher I would like to be'. The 56 adjectival pairs were selected to describe dimensions of teacher behaviour which are potentially relevant to pupil achievement; these were Clarity, Flexibility, Warmth, Enthusiasm, Task-Orientation and Criticism as described by Rosenshine (1971), together with Creativity and Satisfaction. The aim was therefore to develop an instrument which could be used to measure changes in student teachers' self perceptions on a number of dimensions of their teaching behaviour.

Principal factors analysis of the responses revealed that the evaluative structure which was actually applied by the

respondents closely resembled that which had been hypothesized. The seven factors identified were Creativity, Orderliness, Warmth-Supportiveness, Satisfaction, Clarity, Energy-Enthusiasm and Non-Conformity. In addition to identifying this evaluative structure, the questions of subject-scale interaction, concept-scale interaction and reliability are discussed in relation to the development of the instrument.

In the latter sections of the report the validity of the instrument is investigated. On the basis of related research it is predicted that the instrument should yield higher scores for females than males on Warmth-Supportiveness, Orderliness and Conformity; and that it should yield higher scores for primary teachers than secondary teachers on Warmth-Supportiveness. Each of these predictions was supported by the analyses, thus providing evidence of the instrument's construct validity.

A further set of analyses tested the prediction that respondents would record higher aspirational levels for professional self than for global personal self for Clarity, Orderliness, Creativity, Warmth-Supportiveness, and Energy-Enthusiasm. This prediction was based on the assumption that the behaviours related to these dimensions have particular salience in the teacher's role. Each of these predictions was supported by the data.

ACKNOWLEDGMENTS

The development of the scales reported in this monograph was supported by research grants from the James Cook University of North Queensland and the Education Research and Development Committee. Assistance was also received from the Melbourne State College and the University of Western Australia.

The authors also wish to acknowledge the co-operation of staff and student teachers in the participating institutions which were the James Cook University of North Queensland, Kelvin Grove College of Advanced Education, Mount Gravatt College of Advanced Education, and Townsville College of Advanced Education.

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1. CHANGE IN SELF PERCEPTION AS A CRITERION FOR EVALUATING TEACHER EDUCATION PROGRAMS

The Search for Evaluative Criteria in Teacher Education

A major problem which confronts teacher educators who seek to evaluate their programs is the lack of evaluative criteria. The absence of such criteria has been one of the major reasons why the question of the relative effectiveness of different programs remains unanswered. Amidst the diversity of programs which have emerged in this country, there are few empirically based answers to the question of whether it makes any difference which program a student undertakes, or whether certain kinds of programs are more appropriate for certain kinds of individuals than are others. One of the notable exceptions has been the research focus on the effectiveness of micro-teaching (Turney, Clift, Dunkin and Traill, 1973; Clift, Batten, Burke and Malley, 1974).

One approach in the search for evaluative criteria is to conceptualize teacher education as a socialization process in which the student teacher moves from a lay student sub-culture into the professional teacher sub-culture. The facets of this process are many. They include changes in reference groups, changes in values, attitudes and level of commitment to teaching, changes in level of professional aspirations, self esteem and other aspects of self view, and the acquisition of new knowledge and skills. Defined in this way, the question of program evaluation in the area of teacher education is one of establishing the desired direction of change on each of these facets and of determining whether it has been attained. However, determining the desired direction of change on these facets raises many questions of value which remain unanswered. For example, little more than a decade ago teacher educators

and researchers were still attempting to place value on the direction of attitude change in student teachers. Programs which fostered democratic, progressive, pupil-related attitudes were ascribed greater value than those which did not. The failure of high scores on instruments such as the Minnesota Teacher Attitude Inventory to predict teacher effectiveness finally discouraged the belief that certain kinds of attitude change comprise useful criteria of effectiveness.

Establishing the desired direction of change is also a problem with some other facets of the socialization process. Growth in commitment, when defined in terms of an increased willingness to remain in teaching, might indicate little more than a perceived lack of occupational mobility (Coulter,1972). A somewhat similar problem arises when increased commitment is defined in terms of growth in the value which the student attributes to the activities of teaching. Beginning teachers are inducted into classroom contexts in which the value of curriculum and instruction varies; for some students, growth in commitment may indicate little more than an unquestioning acceptance of the situation, and in this sense has serious limitations as a criterion of program effectiveness.

Competence in teaching behaviours which have high learning potential for pupils is obviously an appropriate criterion, and one which is used in many programs. Microteaching effectiveness for example, is judged in terms of the acquisition of target skills and in some cases, in terms of the transfer of these skills to the real classroom. Although behavioural criteria of this kind should be sought and applied in the long term, there are presently serious limitations to their use. These limitations relate to the dearth of unequivocal evidence on which teacher behaviours do have high learning potential for pupils in the endless array of classroom

contexts (Dunkin and Biddle, 1974; Heath and Nielson, 1974); and they relate also to reliable measurement and reporting of the incidence of such behaviours in the student teacher's classroom (Lantz, 1967; McDonald, 1971; Morgan, 1972; Coulter, 1975).

Self Perception as an Evaluative Criterion

A facet of the socialization process which does hold promise as a criterion for judging program effectiveness is change in professional self perception and level of adjustment. Adjustment here is an aspect of self perception defined as the discrepancy between level of aspiration and perceived attainment on various dimensions of the professional role. There are a number of reasons why changes in self perception and adjustment are appropriate criteria. First, self image interacts with and affects performance (Purkey, 1970; Hamachek, 1971). The individual may feel positively because he has performed well; and, in turn, positive self attitudes enhance the likelihood of successful subsequent performances in similar contexts.

Apart from its influence on performance, positive self perception may be interpreted as an index of the student teacher's adjustment to the professional role. Where a student teacher aspires to be competent on a particular dimension of the professional role and also perceives himself to be competent, then he may be regarded as professionally well adjusted; that is, well adjusted in the sense that he perceives himself as fulfilling his professional aspirations rather than being thwarted or frustrated.

Thus, unlike the more generalized domain of professional attitudes, a value can be placed on the direction and

magnitude of change in professional *self* attitudes. This is not meant to imply that student teachers should have unrealistically positive professional self attitudes. What is implied is that if student teachers are to self actualize in their professional roles, they should not only possess that knowledge and skill regarded as necessary for competent role performance; they should also *see* themselves as effective and competent. They should see themselves as realizing their potentialities, and as fulfilling their aspirations. This is provided that those aspirations can be argued to have objective value in the sense that they are concerned with professional behaviour which can be intuitively or empirically related to pupil growth. High aspirations within the global dimensions of, say, teacher Clarity, Warmth-Supportiveness, or Flexibility as reviewed by Rosenshine (1971) would satisfy this provision. That is, the professional education of student teachers should embrace and promote each of these interrelated aspects of competence: the development of actual knowledge and skills, and the development of a positive professional self view. This has been emphasized by Edgar (1974) who observed that

> the individual's control over his own environment, his efficacy, his potential for self actualization depend both on his actual skills and abilities (the equipment for competent role performance) and on his self concept, the extent to which he sees himself as effective, competent, powerful instead of powerless (the competent self). (p. 380)

It is for these reasons that the authors have developed the instrument described in this report. Because change in self perception is an important aspect of professional socialization, it should be measured in order that programs, or

aspects of programs, which depreciate self view might be reviewed. The instrument described in the following sections is designed to provide teacher educators with evaluative insights of that kind.

2. THE USE OF THE SEMANTIC DIFFERENTIAL METHODOLOGY TO MEASURE CHANGE IN PROFESSIONAL SELF PERCEPTIONS

Earlier Work: Its Relationship to the Present Instrument

This report is an extension of earlier studies which have used the semantic differential technique to measure changes in self perceptions of student teachers as they are socialized into the classroom teaching situation. Studies which have utilized the semantic differential methodology to assess the impact of early teaching experience upon self perceptions of beginning teachers include those of Wright and Tuska(1966), Walberg (1966), Walberg, Metzner, Todd and Henry (1968),Dumas (1969), Alloway (1973) and Coulter (1974).

Some of these studies have used the semantic differential methodology to assess the effects of different kinds of training experiences on student teachers. For example, the conclusion of Walberg, *et al.* (1968) that tutoring experience may enhance certain dimensions of professional self view was based on measures derived from a semantic differential. And the conclusions of Alloway (1973) and Coulter (1974) that the degree of gradualism in the student teacher's induction to the total classroom teaching situation may contribute to the maintenance of a positive professional self image were also derived from semantic differential measures.

Differences Between the Present Semantic Differential and Earlier Instruments

The instrument described in the present report has been designed for a purpose similar to that which guided earlier studies: to measure the effects of certain aspects of teacher education programs upon selected dimensions of self perception in teacher trainees. However, there are several differences between the semantic differential which will be described here and those used in the studies cited above. The first difference relates to the dimensions of professional self perception measured. The factor analyses of Alloway (1973) and Coulter (1974) were based upon the responses to twenty-five adjectival pairs which had been used previously by Wright and Tuska (1966) and Walberg (1966). The factors identified by Alloway and Coulter were Warmth, Orderliness or Clarity, Dynamism and Happiness. The first two of these factors, Warmth and Orderliness, approximated to dimensions of teacher behaviour which Rosenshine (1971) described as being related to pupil achievement. In the development of the present instrument, an attempt has been made to extend these dimensions to include self perceptions of other behaviours which the reviews of Rosenshine (1971) and Rosenshine and Furst (1971) suggested were associated with pupil learning. Details of these dimensions are provided in a subsequent section of this report.

The second difference between the instrument described here and those reported above, relates to the assumptions which underlie the use of the semantic differential. Two assumptions which underlie each of the above studies, and which are investigated in the present report, are that the adjectival pairs or scales are used in the same way across the various concepts rated; and that the scales have the

same connotative meaning for different sub-groups of respondents such as males and females, primary teachers and secondary teachers. These two phenomena, *concept-scale interaction*, and *subject-scale interaction*, are accounted for in the development of the present semantic differential. In very general terms, the present study has sought to identify a set of adjectival pairs which load on the same factors across a number of different concepts, whether the respondents be male,female, primary or secondary teacher trainees.

3. SUBJECTS USED IN THE DEVELOPMENT OF THE INSTRUMENT

An initial pool of 56 adjectival pairs was administered to 396 student teachers. These respondents were drawn at random from the third year of primary and secondary teacher education programs in four different institutions in Queensland. Because of the need to investigate the existence of subject-scale interaction, the respondents included males, females, primary and secondary student teachers. Table 1 indicates that the actual numbers in each of these four categories varied slightly from the 100 which were sought.

The mean age of the group was 20.8 years (s.d. 3.3). Apart from practice teaching none of the respondents had previous teaching experience.

TABLE 1

Student teachers: frequency distribution according to areas of teaching specialization (N = 396)

	Teaching specialization		f	
Male	Primary			106
	Secondary:	Maths-Science	43	
		Man. Arts	19	
		Phys. Education	11	
		Humanities	11	
		Not grouped	1	85
Female	Primary			124
	Secondary:	Maths-Science	13	
		Home Economics	38	
		Phys. Education	6	
		Humanities	23	
		Not grouped	1	81
		TOTAL		396

4. DEVELOPMENT OF THE SEMANTIC DIFFERENTIAL

Selection of the Concepts and the Scales

The selection of the concepts and the scales for the instrument was determined by its specific purpose, which was the measurement of selected dimensions of self perception salient in the professional role of the teacher.

Concepts. The four concepts selected were 'Myself', 'Myself as I would like to be', 'Myself as a teacher', and 'The teacher I would like to be'. This permitted the investigation of the extent to which the scales were stable across different concepts. The two aspirational self concepts were also included to indicate clearly what the respondents perceived to be the positive ends of the scales. The four concepts were randomly assigned to the instrument in six different sequences.

Scales. Fifty-six evaluative scales were selected and assigned in random order to the original item pool (Appendix 1). The adjectival pairs selected for the item pool were largely those which describe teacher behaviours reported by Rosenshine (1971) as having low but consistent relationships with pupil achievement. These behaviours included Clarity, Warmth, Flexibility, Enthusiasm, Thrust (or Task-Oriented behaviour) and Criticism. In addition, adjectival pairs were included which describe Creativity - Originality and Satisfaction. The scales which describe Creativity were included to indicate the extent to which students perceived that the socializing press to conform inhibited their inventiveness as teachers. Satisfaction was included as an additional index of adjustment to the professional role; additional, that is, to the other index of adjustment defined as self-ideal

congruence. The adjectival pairs which correspond to each of these eight dimensions of self perception are identified in Appendix 1. The extent to which student teachers actually used the adjectives in a manner corresponding to these eight hypothesized dimensions of self view is tested by the factor analyses reported in the following section.

Factor Analyses of the Responses to the 56 Scales

Early factor analytic studies by Osgood (1952) and Osgood, Suci and Tannenbaum (1957) suggested that polarized adjectival pairs within the semantic differential may be used to evaluate (good-bad), to describe potency (strong-weak), or to describe activity (active-passive). It was assumed in the present study that all scales selected were evaluative, and that the positive ends of the continua would be indicated by the responses to the concepts 'Myself as I would like to be', and 'The teacher I would like to be'. The expectation that eight evaluative factors might emerge, rather than one as originally described by Osgood, was based on the fact that respondents generally apply a more complex evaluative structure when describing concepts which are as personally immediate as the ones used in this study (Komorita and Bass, 1967; Elsworth, 1972). It could not be assumed, however, that these scales would be used in a manner which corresponded to the eight dimensions described in the previous section. Factor analyses were therefore carried out to determine the nature of the evaluative structure used by the respondents.

To test for the existence of concept-scale interaction, a matrix comparison technique was used to compare the factor structures for each of the four concepts ('Myself', 'Myself as a teacher', etc.). To test for the existence of subject-scale interaction, the same procedure was used to compare the factor

structures derived separately from the responses of males, females, primary and secondary student teachers.

Identification of Factors

Principal factors analyses were applied to all subjects' responses summed across the four concepts. Initially an eight factor solution was tested, based on the original hypothesis that there would be eight dimensions of self perception described by the scales. Seven interpretable factors were obtained, together with an uninterpretable residual factor. Accordingly a seven factor solution was tested, and as the structure of the seven interpretable factors changed only slightly, this was accepted as the most meaningful structure.

The scales which loaded on each of these seven factors were ranked in their order of purity according to the procedure specified by Bentler and La Voie (1972). This factor matrix with scales ranked in order of purity is reported in Table 2.

Interpretation of the Factors

The highest and purest loadings on Factor 1 relate to scales describing *Creativity*. The majority of the scales originally hypothesized as describing the two dimensions, Creativity - Originality and Flexibility, loaded on Factor 7, a new factor for which the common dimension is perhaps best described as *Non-Conformity*. It is understandable that student teachers should distinguish between Conformity, as arising from institutionalized expectations to acculturate in the direction of new attitudes and behaviours, and Creativity in the sense of being capable of being inventive and imaginative in their teaching and wider personal behaviour.

TABLE 2

Loadings of 56 SD scales on 7 principal factors for student teachers (N = 396)

Scales		Factor Loadings*						
		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Factor 1								
Imaginative – Unimaginative		.71						
Creative – Uncreative		.66						
Adaptable – Rigid		.52		.42				-.43
Flexible – Inflexible	+	.41		.36				
Factor 2								
Organized – Disorganized	+		.85					
Orderly – Chaotic	+		.82					
Systematic – Random			.73					
Arranged – Jumbled	+		.75			.30		
Prepared – Unprepared			.70					
Efficient – Inefficient			.71					
Certain – Wavering	+		.44		-.33	.35		
Purposeful – Purposeless	+		.39	.32			-.35	
Factor 3								
Comforting – Reproaching				.72				
Praising – Condemning	+			.71				
Kind – Mean	+			.70				
Esteeming – Insulting	*			.68				
Rewarding – Punishing				.68				
Accepting – Rejecting				.67				
Warm – Cool				.62				
Friendly – Hostile				.68			-.32	
Close – Distant				.63				
Tolerant – Intolerant	+			.67				
Sensitive – Insensitive				.52				
Encouraging – Discouraging				.60			-.34	
Intimate – Aloof	+			.54				
Yielding – Unyielding				.40				
Familiar – Strange				.32				
Deep – Shallow	+			.28				

Factor 4								
Satisfied – Dissatisfied					-.77			.31
Contented – Discontented					-.77			
Fulfilled – Frustrated					-.71			
Factor 5								
Sharp – Blurry	+				-.32	.59		
Clear – Vague	+		.37			.58		
Informing – Puzzling	+		.32			.54		
Lucid – Obscure						.48		
Comprehensible – Incomprehensible			.33			.51		
Sure – Shifting			.33			.43		
Full – Empty				.34		.36	-.34	
Factor 6								
Enthusiastic – Unenthusiastic				.31			-.64	
Energetic – Inert	+		.31				-.62	
Eager – Indifferent	+		.32	.35			-.59	
Spirited – Apathetic				.42			-.59	
Stimulating – Dull	+	.30		.31		.34	-.53	
Animated – Lifeless				.35			-.53	
Fresh – Stale				.32			-.49	
Happy – Sad				.39	-.33		-.50	
Challenging – Unchallenging	+	.37				.31	-.42	
Cheerful – Solemn				.49			-.50	
Factor 7								
Unconventional – Conventional	+							-.84
Nonconforming – Conforming	+							-.76
Unusual – Usual	+							-.70
Liberated – Restrained	+							-.64
Free – Constrained								-.54
Unlimited – Limited	+							-.51
Varied – Constant								-.43
Original – Stereotyped	+	.47						-.55
PERCENTAGE TOTAL VARIANCE		4.9	9.8	14.6	5.2	5.9	8.3	7.5

* Factor loadings > .30
Eigen values > 0.89
\+ Scale reversed in original instrument

Factor 2 is clearly the task-oriented, business-like factor originally hypothesized as Thrust. This factor was renamed because the common dimension of the adjectives 'organized, orderly, systematic, arranged, prepared and efficient' was more appropriately described as *Orderliness*. Factor 3, which is the largest evaluative factor, is best interpreted as a *Warmth-Supportiveness* factor which includes most of the scales originally hypothesized as loading on two separate factors, Warmth and Criticism. Apparently the respondents saw these not as separate dimensions but as being part of the same continuum ranging from warm, accepting and friendly behaviours, to hostile, rejecting and cool behaviours.

Factor 4 is clearly a *Satisfaction* factor. It emerged as a small factor because the majority of the scales originally hypothesized as being part of this factor (happy-sad, familiar-strange, shallow-deep, cheerful-solemn) were used in a general evaluative manner and tended to have low loadings across a number of different factors.

Factor 5 emerged very much the *Clarity* factor as hypothesized, and although somewhat related to the *Orderliness* factor, is conceptually discrete from it in the sense that its scales clearly denote cognitive Clarity in the presentation of ideas (lucid-obscure, informing-puzzling, clear-vague, comprehensible-incomprehensible) rather than Orderliness (organized-disorganized, arranged-jumbled, systematic-random, efficient-inefficient).

Factor 6 includes all seven scales in the dimension originally hypothesized as *Energy-Enthusiasm*. The somewhat low and impure loadings on a number of other scales which loaded on this factor suggests that they were applied in a general evaluative manner (happy-sad, cheerful-solemn). Equally,

other scales which recorded low and impure loadings on this dimension (spirited-apathetic, animated-lifeless) may have been used by some respondents to describe activity rather than to evaluate.

In summary, the structure which emerged in this general factor analysis strongly resembled that which was hypothesized. However, there was sufficient difference between the evaluative structure that was hypothesized and that which emerged to illustrate the folly of assuming the nature of the structure which different populations may apply to an item pool such as this.

Investigation of Subject and Concept-Scale Interaction

It remained to investigate whether factor structures derived for each of the four concepts and from the responses of various sub-groups were congruent with the overall structure reported in Table 2.

Principal factors analyses were therefore applied to the data matrices derived from the responses of (a) all subjects to each of the four concepts separately and (b) each of four sub-groups, which were males, females, primary and secondary teachers. The extent to which these eight sub-structures were congruent with the structure reported in Table 2 was determined by both visual comparison and a factor matrix comparison procedure (Veldman, 1967, pp. 238-245). This latter procedure determines the extent to which the factor axes of one of the sub-structures must be rotated to overlap maximally with those of the original structure. The amount of rotation necessary is expressed as a matrix of cosines of angles between all pairs of factor axes in the two structures. The cosine of the angle between any of the paired vectors may then be

interpreted as a correlation between the factors under comparison or as the loading of the factor from the sub-structure on that of the original structure.

Table 3 summarizes the results of these analyses by presenting the correlations between each of the factors in the eight sub-structures with the corresponding factors in the general matrix. Although high correlations were to be expected in a factor comparison of this kind as the two structures being compared were not completely independent, it was nonetheless true that there was little indication of subject-scale interaction. The relative absence of subject-scale interaction was further borne out by the fact that visual inspection of the *independent* factor structures derived from the responses of males and females indicated that 45 of the 56 scales loaded on the same factors in a similar rank order of purity. A similar comparison of the factor structures derived from primary and secondary student teachers revealed that 44 of the 56 scales loaded on the same factors in similar rank order of purity.

The concept-scale interaction indicated by Table 3 was largely confined to the aspirational concepts. This arose from the tendency for respondents to consistently use the extreme ends of the scales when describing their ideal selves. This phenomenon has been noted elsewhere (Heise, 1969), and results in the tendency for a number of scales to load in a general evaluative manner across a number of different factors.

Table 3 served mainly as a heuristic device to assist in the identification of the main areas of subject-scale and concept-scale interaction. Detailed visual inspection within these areas revealed those particular scales for which loadings were not consistently on the same factor. Such scales were ultimately discarded.

TABLE 3

Correlations between factors of eight sub-matrices and the corresponding (target) factors in the general matrix

Matrices under comparison	Correlation						
	Factor 1 Creativity	Factor 2 Orderliness	Factor 3 Warmth – Supportiveness	Factor 4 Satisfaction	Factor 5 Clarity	Factor 6 Energy – Enthusiasm	Factor 7 Non-conformity
'Myself' x General Matrix	.89	.99	.94	.99	.95	.96	.97
'Myself as I would like to be' x General Matrix	.73	.97	.94	.79	.95	.97	.97
'Myself as a teacher' x General Matrix	.86	1.00	.97	.98	.94	.99	.96
'Teacher I would like to be x General Matrix	.80	.97	.95	.99	.95	.88	.96
Primary subjects x General Matrix	.92	.99	.97	.99	.94	.98	.98
Secondary subjects x General Matrix	.92	.96	.97	.98	.98	.97	.98
Male subjects x General Matrix	.87	.98	.97	.99	.94	.93	.98
Female subjects x General Matrix	.94	.99	.95	.99	.98	.99	.99

Selection of Scales for the Final Instrument

Two criteria were used to select scales from the original item pool. These were:

(i) A loading of .30 or higher for the relevant factor in the general factor structure reported in Table 2.

(ii) A positive purity index on at least seven of the eight sub-structures; that is, the highest loading for the scale was consistently on the relevant factor across concepts and subjects.

Twenty-nine scales met these two criteria. In order to obtain a third scale for the already small Creativity factor and an additional two scales for the small Energy-Enthusiasm factor, the second criterion was relaxed to admit three additional scales. These scales were creative-uncreative, eager-indifferent, and spirited-apathetic, which had positive purity indices on only six of the eight sub-structures.

The thirty-two adjectival pairs listed in Table 4 are therefore scales which describe seven dimensions of self perception corresponding largely to those which were originally hypothesized. Furthermore, these are scales which maintain high and consistent loadings on the same factor across different concepts and sub-groups of respondents.

TABLE 4

Loadings and purity indices for final semantic differential scales (N = 396)

Factor	Scale		Loading	Purity Index
Creativity	imaginative	- unimaginative	.71	.41
	creative	- uncreative	.66	.37
	adaptable	- rigid	.52	.10
Orderliness	organized	- disorganized	.85	.70
	orderly	- chaotic	.82	.62
	systematic	- random	.73	.49
	arranged	- jumbled	.75	.47
	prepared	- unprepared	.70	.45
	efficient	- inefficient	.71	.44
Warmth-Supportiveness	comforting	- reproaching	.72	.49
	kind	- mean	.70	.45
	esteeming	- insulting	.68	.44
	rewarding	- punishing	.68	.43
	warm	- cool	.62	.36
	friendly	- hostile	.68	.36
Satisfaction	satisfied	- dissatisfied	.77	.54
	contented	- discontented	.77	.53
	fulfilled	- frustrated	.71	.43
Clarity	sharp	- blurry	.59	.30
	informing	- puzzling	.54	.19
	clear	- vague	.58	.19
	lucid	- obscure	.48	.18
Energy-Enthusiasm	enthusiastic	- unenthusiastic	.64	.31
	energetic	- inert	.62	.30
	eager	- indifferent	.59	.22
	spirited	- apathetic	.59	.17
	fresh	- stale	.49	.14
Non-conformity	unconventional	- conventional	.84	.68
	non-conforming	- conforming	.76	.54
	unusual	- usual	.70	.46
	liberated	- restrained	.64	.37
	free	- constrained	.54	.22

5. RELIABILITY OF THE INSTRUMENT

The reliabilities of the scales were derived from data provided by a separate sample of secondary teacher education students.[1] A sample of over one thousand students was administered the refined 32-item semantic differential on two occasions. The scales were used to rate two concepts: 'Myself as a teacher' and 'The teacher I would like to be'. The interval between the first and second administration of the scales was approximately nine months, a period which encompassed the time of the students' first significant contact with classroom teaching.

Measures of internal consistency (Coefficient Alpha) were calculated for the scales as used to rate the two separate concepts on the two separate occasions. These reliability estimates for each scale are presented in Table 5 together with estimates of the reliability of the total scale. For the purposes of the discussion which follows, estimates of the reliabilities of all scales were also calculated for a hypothetical test of six items, assuming that the average correlation of items in the hypothetical test was the same as that in the original scale (Nunally, 1967, p. 223).

The reliability estimates for the individual scales varied from 0.56 to 0.89 (Table 5). The median value of the reliability estimates was 0.785. As would be expected, reliabilities for the shorter scales were generally lower. The exception was the *Satisfaction* scale which, for a very short scale, appeared to be highly internally consistent. As well, reliabilities of scales when used to rate the concept 'The teacher I would like to be' were lower than when the scales

[1] The reliability data presented in this report were obtained after the initial development of the instrument.

TABLE 5

Reliability estimates for the scales for the assessment of teacher self perception

Scale	Item N	Reliability Estimate (Coefficient Alpha)			
		First Administration		Second Administration	
		Myself as a teacher	The teacher I would like to be	Myself as a teacher	The teacher I would like to be
		N = 1127	N = 1122	N = 779	N = 774
Creativity	3	0.73	0.67	0.77	0.69
	(6)	(0.84)	(0.80)	(0.87)	(0.82)
Orderliness	6	0.87	0.83	0.89	0.84
Warmth - Supportiveness	6	0.75	0.81	0.81	0.81
Satisfaction	3	0.85	0.79	0.89	0.79
	(6)	(0.92)	(0.88)	(0.94)	(0.88)
Clarity	4	0.78	0.56	0.82	0.60
	(6)	(0.84)	(0.66)	(0.87)	(0.69)
Energy - Enthusiasm	5	0.81	0.78	0.86	0.78
	(6)	(0.84)	(0.81)	(0.88)	(0.81)
Non-conformity	5	0.77	0.73	0.78	0.74
	(6)	(0.80)	(0.76)	(0.81)	(0.77)
Total Scale	32	0.89	0.87	0.92	0.89
	(6)	(0.60)	(0.56)	(0.68)	(0.60)

were used to rate the concept 'Myself as a teacher', a reflection of the considerable attentuation in response variance when all but the *Non-conformity* items were used with the aspirational concept.

The individual scales thus appear to be reliable. Whilst it is difficult to place a finite range on desirable scale reliabilities, Nunally (1967), has suggested that scales with reliabilities of .50 to .60 may be adequate, and that it may even be counter-productive to strive to reliabilities greater than 0.80 when scales are to be used in either correlational or experimental research as predictor or criterion variables.

The reliabilities of the total 32-item scale were high. The use of the total score on the scale as a general measure of professional self esteem in addition to scores on the individual scales would therefore seem to be justified. That the high reliability of the total scale resulted primarily from its considerable length however, was demonstrated by re-estimating all reliabilities for a test of common length (six items). These estimates revealed that the internal consistencies of the individual sub-scales were considerably higher than the internal consistency of the total scale.

This finding taken together with the evidence regarding the construct validities of the seven separate dimensions of self perception discussed in the next section of this report indicates that the separate scales are quite sufficiently reliable and distinctive as measures of the separate constructs. The total scale may be used, additionally, to generate a reliable general index of professional self esteem or, if used to generate a self-ideal discrepancy score, an index of professional adjustment.

6. THE VALIDITY OF THE INSTRUMENT

Procedure for Investigating Construct Validity

It is generally quite difficult to demonstrate conclusively that an instrument such as this measures what it purports to measure. In this case, the question of validity was one of whether the scales for the assessment of teacher self perception provided measures which corresponded to *actual* self perception on the seven dimensions concerned.

It is customary to distinguish three broad aspects of validity; content, predictive and construct validity(Nunally, 1967). Construct validity, or the extent to which an instrument actually measures the target constructs, appears to be the aspect most relevant to the present situation. The investigation of construct validity, which is reported in this section, proceeded on the assumption that if the instrument was actually measuring the target constructs, then scores derived from it should correlate with other variables with which those constructs logically related. This assumption is implicit in the three-stage process suggested by Nunally (1967) for the development and validation of measures of psychological constructs. The first two stages of Nunally's process involve the theoretical specification of the domain of constructs to be measured, the development of items to measure the constructs, and the testing of the inter-relationships between the items. This latter aspect involves the investigation of the internal structure of the developed measures of the constructs, by factor analysis or a like procedure.

The factorial nature of the scales for the assessment of teacher self perception has been investigated and discussed earlier in this report. Eight dimensions of professional and personal self perception were hypothesized on the basis of

process-product observational studies of teaching, and an attempt was made to operationalize these dimensions in the domain of self perception. It was demonstrated that the structural organization of the developed scales was most clearly approximated by seven dimensions of reasonable congruency with the eight originally hypothesized, and that the simple scoring of the seven scales led to internally consistent measures. This congruency between the hypothesized and emergent structures provided some grounds for believing that the scales measured the target constructs.

The third stage of the process described by Nunally involves the establishment of relationships between the measured variables and other observables; relationships that can reasonably be expected on the grounds of theory, prior related research or intuition. The question under investigation is thus whether the construct measures behave as expected in relationship with other variables in the lifespace of the individuals responding to the scales. This section of the report is thus concerned with the above question.

Relationships were predicted between scores derived from the instrument and two 'status' characteristics of the respondents. These characteristics were *Sex* and *Level of teaching* (primary or secondary school). As the predicted relationships had been reported consistently in related research, it was expected that they would emerge here also if the instrument were valid. Unfortunately, the scope of these predicted relationships did not encompass every dimension of self perception measured by the instrument. This limitation was imposed by the scope of the relevant related research. Because of this limitation, the construct validity of the instrument was also investigated against a further set of predictions established on intuitive grounds. These predictions are tested

later in this section.

The specific predictions derived from the related research literature were as follows:

(1) When compared with male student teachers, females perceive themselves as more:
    (1.1) warm and supportive
    (1.2) conforming
    (1.3) orderly

(2) When compared with secondary student teachers primary student teachers see themselves as more warm and supportive.

The first three predictions were guided by consistent trends reported by Maccoby (1967) in her review of the research on sex differences. Of the sixteen studies of adolescents and adults in the area of nurturance and affiliation, women were more nurturent or affiliative in all but one case. Of the seventeen studies of adolescents and adults reviewed in the area of conformity and suggestability, twelve reported differences in the direction of females being more conforming or suggestible. No study reported differences in the other direction.

Edwards (1959) reported similar differences in the norms for his Personal Preference Schedule (EPPS). In both the college and general adult samples, females were higher on *succorance*, *affiliation* and *nurturance*. For *deference*, which corresponds closely to conformity in the present instrument, females were high in both the college and general adult samples. And for the general adult sample, the female mean was higher for *order*, a dimension of the EPPS which closely resembles Orderliness in the present scale.

The final prediction was guided by the findings of Lang

(1960), Southwark (1962) and Wright and Tuska (1966) which suggested that higher scores for Warmth-Supportiveness might be expected from primary teachers than from secondary teachers.

The Relationship Between Sex, Level of Teaching and the Seven Dimensions of Self Perception

The data derived from the 396 respondents were scored along the seven dimensions of self perception by constructing simple equally weighted linear sums of the sub-set of scales finally selected on the basis of the factor analyses. A 2 x 2 non-orthogonal factorial multivariate analysis of variance was performed for the full set of 28 self perception scores as dependent variables. The four groups representing the cells of the 2 x 2 design were MALE-PRIMARY (N=106), FEMALE-PRIMARY (N=124), MALE-SECONDARY (N=85) and FEMALE-SECONDARY (N=81).

The analysis proceeded in two stages. First, multivariate analysis of variance was used to test the effects of *Sex* and *Level of teaching* and the *Sex* x *Level* interaction. Second, univariate analysis of variance was used to identify specific dimensions of self perception which were associated with any differences related to *Sex* and/or *Level* main effects.

The mean scores for each of the four sub-groups of respondents are presented in Appendix 2.

Multivariate Analysis. Table 6 shows that in the multivariate analysis, both *Sex* and *Level* effects were significant well beyond the .01 level of confidence, but that the interaction effect was not significant. The univariate main effects for *Sex* and *Level* were therefore interpreted individually and individual significant interactions were ignored.

Univariate Analyses. The results of the univariate

TABLE 6

Non-orthogonal factorial multivariate analysis of variance of all self perception scores for sex and level effects

Results Summary

Source of Variance	Univariate d.f.	F	Multivariate d.f.	p
Grand Mean	I	-	-	-
Between Sexes (eliminating the Level effect)	1	3.89	28,365	<0.0001
Between Levels (eliminating the Sex effect)	1	1.93	28,365	0.0038
Interaction (eliminating Sex and Level effects)	1	1.15	28,365	0.28
Within Groups	392			
Total	396			

analyses for the *Sex* main effect are presented in Table 7. These results were generally consistent with the predictions advanced at the beginning of this section. Females' self perceptions were higher for Warmth-Supportiveness on each of the concepts. Females also perceived themselves as more conforming than did males on the concepts 'Myself' and 'Myself as a teacher' and more orderly on the concepts 'Myself as a teacher' and 'The teacher I would like to be'. That is, all significant differences for Warmth-Supportiveness, Orderliness, and Non-Conformity were in the predicted direction.

The results of the univariate analyses for the *Level of teaching* main effect are presented in Table 8. These results were also consistent with the earlier prediction that primary teachers, whether they be male or female, would see themselves as being more warm and supportive than secondary teachers.

To the extent that the above results were consistent with previously reported findings, they provided support for the construct validity of the instrument.

Further Investigation of Construct Validity

Five of the seven dimensions of this instrument were selected on the grounds that they measured self perception of teaching behaviours related to pupil learning. These were Clarity, Orderliness, Warmth-Supportiveness, Energy-Enthusiasm, and Creativity. It was expected that prospective teachers would report high levels of aspiration on these behaviours because of their special relevance to the professional role. More specifically, if the instrument were valid, higher aspirational levels on these dimensions for *professional* self than for *general* self would be expected.

The prediction investigated in the present section was therefore:

that the professional aspirations of student teachers for Creativity, Orderliness, Clarity, Energy-Enthusiasm and Warmth-Supportiveness, are higher than their global personal aspirations on these dimensions.

Sex and *Level* of teaching were included in the following analyses to determine whether these dimensions were perceived to be more or less professionally salient by different groups of student teachers.

Procedure. The analyses treated each of the five selected dimensions of self perception as a separate dependent variable. The design chosen was a 2 x 2 x 2 x 2 mixed-model design with two factors in the design on the student teachers (*Sex* and *Level*, the 'between subjects' factors) and two factors in the design on the concepts (the repeated measures, or 'within subjects' factors). The two-factor design on the concepts was developed by grouping the concepts, first according to whether they represented aspirational or actual self perceptions (i.e. the *Aspect* of the concept in the sense of the 'point of view' from which it was evaluated), and second, according to whether they were concepts pertaining to the global perception of self or the professional perception of self (i.e. the *Role* designated by the concept). The concept *Aspect* factor thus carried the distinction between the concept pair 'Myself' and 'Myself as a teacher' on the one hand, and the concept pair 'Myself as I would like to be' and 'The teacher I would like to be' on the other. Similarly, the concept *Role* factor carried the distinction between the concept pair 'Myself' and 'Myself as I would like to be' on the one hand, and the concept pair 'Myself as a teacher' and 'The teacher I would like to be' on the other. The analyses were performed for each dependent variable separately, utilizing the multivariate approach to repeated measures analysis. This

TABLE 7

Non-orthogonal factorial multivariate analysis of variance of all self perception scores for sex and level effects

Combined means and univariate F tests for the Sex main effect eliminating the level effect

	Self Perception Variables	Male Means	Female Means	Univariate F (1,392 d.f.)	p
Myself	Creativity	15.73	15.97	0.64	.42
	Orderliness	29.63	30.97	3.63	.06
	Warmth	31.57	34.04	25.84	<.0001
	Satisfaction	13.97	14.16	0.21	.65
	Clarity	19.26	19.66	0.79	.37
	Energy	27.27	27.93	2.15	.14
	Non-conformity	21.69	19.59	14.74	.0002
Myself as I would like to be	Creativity	19.49	19.81	2.48	.12
	Orderliness	35.99	36.66	1.73	.19
	Warmth	35.79	37.95	26.50	<.0001
	Satisfaction	19.31	19.79	4.64	.03
	Clarity	23.94	23.76	0.38	.54
	Energy	32.17	32.72	3.13	.08
	Non-conformity	26.35	25.98	0.66	.42

Myself as a teacher	Creativity	15.53	15.73	0.45	.50
	Orderliness	31.39	32.64	4.34	.04
	Warmth	32.74	34.42	12.23	.0006
	Satisfaction	13.78	12.92	3.19	.07
	Clarity	20.69	20.66	0.03	.85
	Energy	27.56	27.88	0.43	.51
	Non-conformity	19.75	17.95	10.94	.001
The teacher I would like to be	Creativity	19.68	20.15	7.30	.007
	Orderliness	37.42	38.52	7.22	.008
	Warmth	35.68	38.09	35.36	< .0001
	Satisfaction	19.58	19.56	0.00	.95
	Clarity	25.16	25.12	0.06	.81
	Energy	32.72	33.37	6.26	.01
	Non-conformity	26.55	26.00	1.56	.21

Multivariate F test for the Sex main effect (eliminating level)

$F_{365}^{28} = 3.89,\ p < 0.0001$

TABLE 8

Non-orthogonal factorial multivariate analysis of variance of all self perception scores for sex and level effects

Combined means and univariate F tests for the Level main effect eliminating the sex effect

	Self Perception Variables	Primary Means	Secondary Means	Univariate F (1,392 d.f.)	p
Myself	Creativity	15.67	16.10	1.76	.18
	Orderliness	29.93	30.87	1.88	.17
	Warmth	33.06	32.56	0.57	.45
	Satisfaction	13.90	14.30	0.77	.38
	Clarity	19.68	19.17	1.37	.24
	Energy	27.58	27.66	0.06	.81
	Non-conformity	20.29	21.04	1.42	.23
Myself as I would like to be	Creativity	19.70	19.60	0.18	.68
	Orderliness	36.29	36.41	0.09	.77
	Warmth	37.33	36.32	4.73	.03
	Satisfaction	19.60	19.50	0.11	.74
	Clarity	24.00	23.63	1.26	.26
	Energy	32.57	32.30	0.63	.43
	Non-conformity	26.37	25.87	1.13	.29

Myself as a teacher	Creativity	15.55	15.75	0.41	.52
	Orderliness	32.14	31.90	0.09	.76
	Warmth	34.04	33.02	3.87	.05
	Satisfaction	13.25	13.45	0.11	.74
	Clarity	21.03	20.19	4.96	.03
	Energy	27.77	27.66	0.04	.85
	Non-conformity	18.81	18.83	0.02	.89
The teacher I would like to be	Creativity	20.05	19.75	2.71	.10
	Orderliness	38.10	37.84	0.23	.63
	Warmth	37.84	35.67	27.22	< .0001
	Satisfaction	19.57	19.56	0.00	.95
	Clarity	25.34	24.86	3.89	.05
	Energy	33.31	32.70	5.49	.02
	Non-conformity	26.65	25.74	3.78	.05

Multivariate F test for the Level main effect (eliminating sex) $F_{365}^{28} = 1.93, \quad p = 0.0038$

approach, whilst being somewhat less sensitive with small samples compared with the 'classical' approach to the analysis of repeated measures designs, avoids the restrictive assumption of homogeneity of within-group covariances carried by the latter. This assumption is frequently violated by complex mixed-model designs. Valuable non-technical descriptions of the multivariate approach to repeated measures analysis have recently been given by McCall and Appelbaum (1973) and by Poor (1973). Equally valuable, but more technical accounts are available in Finn (1969) and Bock (1975).

For the present analyses the four variables representing the four domains of self perception as measured on each separate dimension were transformed to four variables which carried the 'within subjects' effects of interest and their interaction. The 'between subjects' effects were then analyzed for this group of transformed variables, firstly by the appropriate multivariate test of significance and then by separate univariate tests of significance. As the analysis was not orthogonal two separate orders of the 'between subjects' main effects were analyzed to give unbiased tests of those effects. As the univariate tests of significance were not independent within any group of 'between subjects' effects they were not interpreted as significant unless the appropriate multivariate significance test was also significant (Poor, 1973).

A detailed discussion of the analyses for each of the five dimensions of self perception follows. The results of the analyses are presented in Tables 9 to 13 and Figures 9.1 to 13.3.

Creativity. The effect of interest in this analysis (Table 9) was the interaction between concept *Aspect* and concept *Role*. A sketch of the appropriate combined means for

TABLE 9

Analysis of variance of creativity scores on four aspects of self perception

Source of Variation		Multivariate Analysis (4,389 d.f.) F	p	Univariate df	Univariate Analysis F	p
Constant				1		
Constant		16150.16	<.0001		-	-
Aspect					805.50	<.0001
Role					0.10	.75
Aspect x Role					10.15	.0016
Sex				1		
Between Sexes	Eliminating	1.85	.12		2.65	.10
Sex x Aspect	effects in				0.29	.59
Sex x Role	Constant and				0.08	.78
Sex x Aspect x Role	Level groups				0.35	.56
Level				1		
Between Levels	Eliminating	1.57	.18		0.12	.73
Level x Aspect	effects in				3.05	.08
Level x Role	Constant and				1.79	.18
Level x Aspect x Role	Sex groups				0.01	.91
Sex x Level				1		
Sex x Level	Eliminating	1.57	.18		0.34	.56
Sex x Level x Aspect	effects in				1.00	.32
Sex x Level x Role	all other				0.05	.82
Sex x Level x Aspect x Role	groups				2.62	.11
Within Groups				392		
Total				N = 396		

an examination of the interaction is presented in Figure 9.1. The significant interaction resulted from student teachers across all groups *aspiring* to higher levels of Creativity in their professional role than in their global personal role, but rating themselves lower on this dimension in their *actual* professional role than in their *actual* personal role. It appeared that students from all groups believed Creativity to be a salient professional trait but found that attainment of this trait in the professional setting was difficult to achieve.

Orderliness. A main effect of *Sex* of respondent and a very marked effect of concept *Role* were revealed in the analysis of Orderliness scores (Table 10). There was no evidence of an interaction between the two effects. The combined means over all concepts for the two sex groups were: Males - (33.60), Females - (34.70). On each of the four concepts utilized in the study, female student teachers perceived themselves to be higher than males on the Orderliness dimension. The analyses presented in the previous section indicated that these differences were significant for the two professional concepts. The absence of a significant *Sex* x *Role* interaction suggested, however, that the pattern was similar for the two global concepts.

The appropriate combined means for the concept *Role* effect were: Global concepts - (33.33), Professional concepts - (35.02). Thus, irrespective of other factors in the design, student teachers perceived themselves to be, and aspired to be considerably higher on Orderliness in their professional roles. It would seem clear that the student teachers perceived Orderliness as a highly salient professional quality to be aspired to and attained. Thus, for this dimension, as with Creativity, the prediction that professional aspirations would be

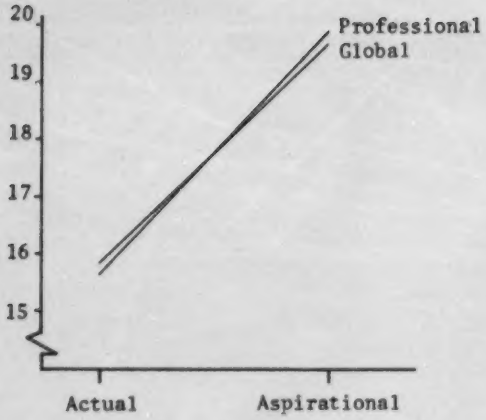

Fig. 9.1: concept *Aspect* x concept *Role* interaction for the dependent variable Creativity. The appropriate combined means were:

Actual - Global	15.85
Actual - Professional	15.63
Aspirational - Global	19.66
Aspirational - Professional	19.92

0,50

TABLE 10

Analysis of variance of orderliness scores on four aspects of self perception

Source of Variation		Multivariate Analysis (4,389 d.f.) F	p	Univariate df	Univariate Analysis f	p
Constant				1		
Constant					-	-
Aspect		9536.48	<.0001		478.61	<.0001
Role					90.79	<.0001
Aspect x Role					0.06	.81
Sex				1		
Between Sexes	Eliminating	2.50	.04		6.03	.01
Sex x Aspect	effects in				0.63	.43
Sex x Role	Constant and				0.14	.72
Sex x Aspect x Role	Level groups				0.87	.35
Level				1		
Between Levels	Eliminating	1.43	.22		0.19	.66
Level x Aspect	effects in				0.62	.43
Level x Role	Constant and				4.64	.03
Level x Aspect x Role	Sex groups				1.97	.16
Sex x Level				1		
Sex x Level	Eliminating	0.19	.94		0.23	.63
Sex x Level x Aspect	effects in				0.47	.49
Sex x Level x Role	all other				0.09	.76
Sex x Level x Aspect x Role	groups				0.11	.75
Within Groups				392		
Total				N = 396		

significantly higher than global personal aspirations was supported.

Clarity. The results of these analyses are presented in Table 11. The predominant effect of interest in the analyses for the dependent variable Clarity was the three-way interaction, *Sex* x *Level* x *Role*. This interaction took precedence over significant main effects of *Role* and *Level* (on the univariate test only) and a *Sex* x *Level* interaction which almost reached statistical significance. A sketch of the appropriate combined means to depict the three-way interaction is presented in Figure 11.1. The effects associated with self perception of Clarity appeared similar, in a broad sense but not in detail, to the effects previously noted for Orderliness.

There appeared to be clear evidence that Clarity was a dimension of self perception of high professional salience. The combined means of all groups and over both actual and aspirational concepts for Clarity were: Global self perception - (21.66), Professional self perception - (22.92). Additionally, the concept *Role* main effect was highly significant. There was also a suggestion in the sketch graph that this effect was particularly strong for the primary student teachers, as with the Orderliness dimension. That the situation was significantly different was evidenced by the significant three-way interaction. Rather than Clarity being of particular professional relevance for primary student teachers as a whole, it appeared particularly salient in the professional role to the primary male group. The regression line of Clarity scores, combined over actual and aspirational concepts, on the Global-Professional distinction was steepest for that group and, whilst Clarity, in terms of aspiration and attainment, did not appear of major concern for the group compared with others in the global sense, it appeared of strong concern in the

TABLE 11

Analysis of variance of clarity scores on four aspects of self perception

Source of Variation		Multivariate Analysis (4,389 d.f.) F	p	Univariate df	Univariate Analysis F	p
Constant				1		
Constant					-	-
Aspect		11255.97	<.0001		666.70	<.0001
Role					104.10	<.0001
Aspect x Role					0.16	.69
Sex				1		
Between Sexes	Eliminating	0.66	.62		0.00	.97
Sex x Aspect	effects in				0.68	.41
Sex x Role	Constant and				0.36	.55
Sex x Aspect x Role	Level groups				2.01	.16
Level				1		
Between Levels	Eliminating	1.72	.15		4.48	.04
Level x Aspect	effects in				0.46	.50
Level x Role	Constant and				0.87	.35
Level x Aspect x Role	Sex groups				0.33	.57
Sex x Level				1		
Sex x Level	Eliminating	2.46	.04		3.49	.06
Sex x Level x Aspect	effects in				1.64	.20
Sex x Level x Role	all other				5.05	.03
Sex x Level x Aspect x Role	groups				0.80	.37
Within Groups				392		
Total				N = 396		

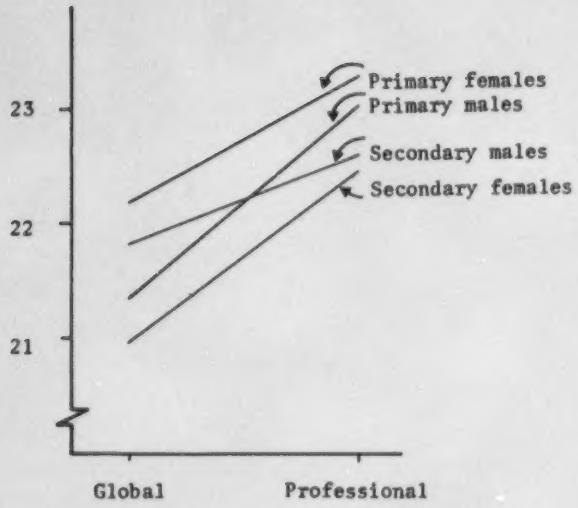

Fig. 11.1: *Sex x Level x* concept *Role* interaction for the dependent variable Clarity. Appropriate combined means were:

Global - Female - Primary	22.18
Global - Female - Secondary	20.99
Global - Male - Primary	21.45
Global - Male - Secondary	21.79
Professional - Female - Primary	23.24
Professional - Female - Secondary	22.37
Professional - Male - Primary	23.13
Professional - Male - Secondary	22.67

professional sense.

Energy-Enthusiasm. The results of these analyses are presented in Table 12. As with the analysis of the data for Creativity, the effect of interest in relation to scores on the Energy-Enthusiasm scale was a significant *Aspect* x *Role* interaction. A sketch of the interaction is presented in Figure 12.1. It revealed that the relationship between the two dimensions was different from that for the Creativity scale. The *Aspect* x *Role* interaction for Energy-Enthusiasm was associated with a main effect of *Role* and the interaction was ordinal with respect to this dimension. The interaction indicated that the *Role* effect resided almost completely in the fact that the Energy-Enthusiasm scores pooled across all groups were higher on the concept 'The teacher I would like to be' compared with scores on the related global aspirational concept 'Myself as I would like to be'. Unlike the findings for Creativity, the student teachers did view themselves as attaining some degree of energy in their professional role compared with their personal role. Thus, again, Energy-Enthusiasm appeared to be a salient aspect of professional self perception with students aspiring to high levels in their professional roles.

Warmth-Supportiveness. The results of the analysis for Warmth-Supportiveness (Table 13) were complex and were dominated by higher order interactions. There were significant interactions as follows:

Level x concept *Role*
Level x concept *Aspect*
Sex x *Aspect* x *Role*
Aspect x *Role*

TABLE 12

Analysis of variance of energy-enthusiasm scores on four aspects of self perception

Source of Variation		Multivariate Analysis (4,389 d.f.) F	p	Univariate df	Univariate Analysis F	p
Constant				1		
Constant					–	–
Aspect		19237.90	<.0001		765.19	<.0001
Role					8.75	.0033
Aspect x Role					4.41	.04
Sex				1		
Between Sexes	Eliminating	1.73	.14		3.39	.07
Sex x Aspect	effects in				0.06	.80
Sex x Role	Constant and				0.32	.57
Sex x Aspect x Role	Level groups				0.81	.37
Level				1		
Between Levels	Eliminating	1.83	.12		0.48	.49
Level x Aspect	effects in				1.30	.26
Level x Role	Constant and				1.21	.27
Level x Aspect x Role	Sex groups				0.08	.78
Sex x Level				1		
Sex x Level	Eliminating	1.16	.33		0.46	.50
Sex x Level x Aspect	effects in				1.17	.28
Sex x Level x Role	all other				1.39	.24
Sex x Level x Aspect x Role	groups				0.98	.32
Within Groups				392		
Total				N = 396		

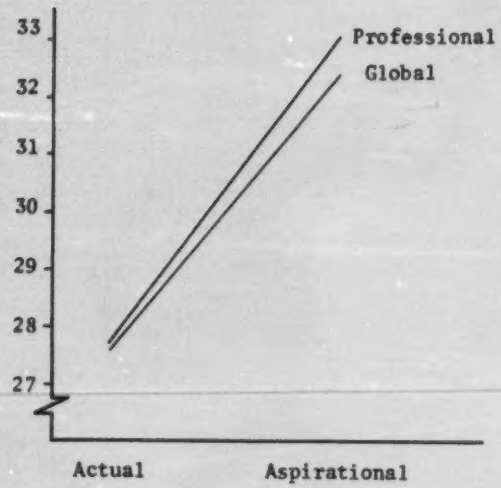

Fig. 12.1: concept *Aspect* x concept *Role* interaction for the dependent variable Energy-Enthusiasm. Appropriate combined means were:

Actual - Global	27.61
Actual - Professional	27.72
Aspirational - Global	32.45
Aspirational - Professional	33.06

TABLE 13

Analysis of variance of warmth-supportiveness scores on four aspects of self perception

Source of Variation		Multivariate Analysis (4,389 d.f.) F	p	Univariate df	Univariate Analysis F	p
Constant				1		
Constant					-	-
Aspect		11271.64	.0001		397.64	< .0001
Role					8.63	< .0036
Aspect x Role					8.14	.0046
Sex				1		
Between Sexes	Eliminating	11.00	.0001		36.68	< .0001
Sex x Aspect	effects in				0.19	.66
Sex x Role	Constant and				1.36	.24
Sex x Aspect x Role	Level groups				3.86	.05
Level				1		
Between Levels	Eliminating	7.96	.0001		8.94	.0030
Level x Aspect	effects in				4.86	.03
Level x Role	Constant and				9.87	.0019
Level x Aspect x Role	Sex groups				1.24	.27
Sex x Level				1		
Sex x Level	Eliminating	1.57	.02		2.24	.14
Sex x Level x Aspect	effects in				1.68	.20
Sex x Level x Role	all other				0.05	.82
Sex x Level x Aspect x Role	groups				1.29	.26
Within Groups				392		
Total				N = 396		

Additionally, these significant interactions existed above highly significant main effects on all four factors. The *Sex* x *Aspect* x *Role* interaction and the two interactions involving *Level* must be interpreted before the other effects. The interaction involving *Sex* and those involving *Level* were independent, but the two *Level* interactions were not mutually independent and hence should be regarded more tentatively.

A sketch of the appropriate raw-score means for interpretation of the *Sex* x *Aspect* x *Role* interaction is presented in Figure 13.1. The sketch indicated that the relationship between concept *Aspect* and concept *Role* differed for the two sexes, although the main effects of both *Sex* and *Role* were clearly evident. Female student teachers generally aspired *and* found themselves to be warmer as teachers than in their wider personal roles. Males, on the other hand, did not aspire to be warmer as teachers than personally, but found themselves to be considerably warmer as teachers. It appeared likely, then, that on this dimension the context of teaching had a major impact on the actual self perception of male student teachers.

The interactions involving the *Level* distinction are presented in Figures 13.2 and 13.3. The *Level* x concept *Role* interaction (Figure 13.2) indicated that primary student teachers saw themselves as warmer in their professional roles than in their wider personal roles, whereas secondary student teachers saw themselves not only as less warm than primary student teachers in their personal roles, but also even less warm in their professional roles. The *Level* x concept *Aspect* interaction (Figure 13.3) suggested that primary student teachers aspired higher professionally on Warmth than did secondary student teachers.

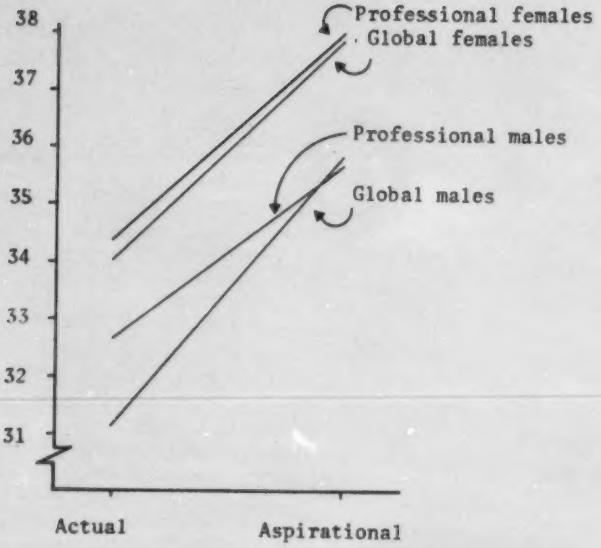

Fig. 13.1: *Sex* x concept *Aspect* x concept *Role* interaction for the dependent variable Warmth-Supportiveness. The appropriate combined means were:

Global - Actual - Males	31.57
Global - Actual - Females	34.04
Global - Aspirational - Males	35.79
Global - Aspirational - Females	37.95
Professional - Actual - Males	32.74
Professional - Actual - Females	34.42
Professional - Aspirational - Males	35.68
Professional - Aspirational - Females	38.09

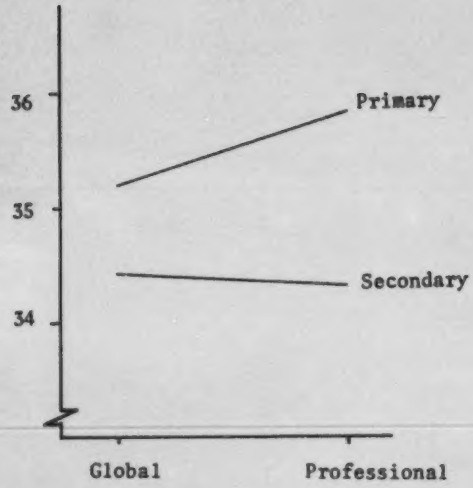

Fig. 13.2: *Level* x concept *Role* interaction for the dependent variable Warmth-Supportiveness. Appropriate combined means were:

Global - Primary	35.20
Global - Secondary	34.44
Professional - Primary	35.94
Professional - Secondary	34.35

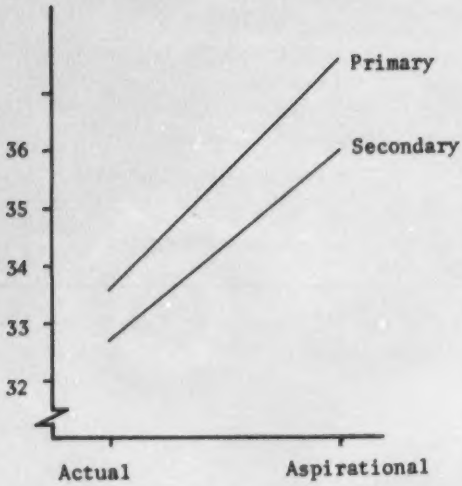

Fig. 13.3: *Level* x concept *Aspect* interaction for the dependent variable Warmth-Supportiveness. Appropriate combined means were:

Actual Concepts - Primary	33.55
Actual Concepts - Secondary	32.79
Aspirational Concepts - Primary	37.59
Aspirational Concepts - Secondary	36.00

In summary, the results of the analysis for the Warmth-Supportiveness scores suggested that all student teachers aspired to higher levels of Warmth than they perceived they were attaining. This finding was particularly true, however, for Warmth in the professional context and, further, particularly true for primary student teachers. Whilst females both aspired to and perceived themselves as having attained more Warmth than males, the finding was less true for males in the professional context where male student teachers found themselves to be considerably warmer than they did in their wider personal roles. Warmth thus appeared to be a highly salient professional concept; particularly salient, in an aspirational sense, for those specializing in the primary area and, interestingly, for males in an achievement sense.

Summary of the Findings Concerning Differences Between Professional and Global Aspirations

The above results were consistent with the predictions advanced at the introduction of the previous section. For each of the five areas of behaviour concerned, professional aspirations were higher than global personal aspirations. This suggested that these five dimensions were perceived by student teachers as being of greater importance to them in their teaching roles than in their wider personal roles. These results provided further strong evidence for the validity of the instrument.

It is of some interest that for the other behavioural dimension, Non-Conformity, for which no predictions were advanced, professional aspirations were not higher than global personal aspirations. These students did not aspire to be more non-conforming in their professional roles than in their wider personal roles (Appendix 3 and 3.1). This was consistent

with what might be expected of students attempting to cope with and adjust to a new and difficult role. At this stage of their professional lives many students might be expected to have a need hierarchy in which survival precedes any attempt to change the system. Although they did not aspire to be more or less non-conforming, they actually perceived themselves as more conforming in their professional role than in their wider personal lives. Again this was strong evidence for the validity of this instrument as it was consistent with a vast body of teacher socialization research which has reported that entry to teaching is accompanied by a press to conform to the more pragmatic, conservative professional values and behaviours exemplified by the school system.

7. USING THE INSTRUMENT

This report was intended to serve two purposes. The first was to demonstrate procedures which should be adopted by researchers who wish to develop semantic differentials for their own specific purposes. In recent years the semantic differential has been a widely used approach to the problem of measuring attitude change. However, the assumptions which underlie the use of the instrument have been violated as often as not. In fact it may be true that the disrepute which has befallen the methodology is more a result of its misuse than anything else. As a guide to other researchers, a summary comment is therefore offered about the major assumptions which should be investigated in the course of developing this kind of instrument.

First, it is commonly assumed that adjectives are used to evaluate, when in fact they may serve to describe activity or potency. For example, when a pupil is asked to describe

himself as a student on a fast-slow continuum, the adjectives may connote either speed (activity) or brightness (evaluation). In such cases the intuition of the researcher is a poor substitute for prior factor analysis.

It is also not uncommon for researchers to assume that adjectives connote similar meanings for different groups of respondents and that they are used in a similar manner to rate different concepts. In the development of the present instrument considerable attention was given to these questions of subject-scale and concept-scale interaction. In this case there was little evidence that various sub-groups of student teachers had used the scales differently to rate the four concepts. However, this should not encourage the belief that other sets of scales will be stable across different concepts and groups. Under other circumstances where the concepts rated relate to more discrete phenomena, and where the respondents are drawn from more culturally distinct populations, such scale stability is unlikely.

The second objective of this report was to describe the development of a particular semantic differential, to present analyses supporting its reliability and validity and to suggest ways in which it might be used.

Presented in Appendix 4 is an example 'professional self perception questionnaire' containing the thirty-two adjective pairs finally selected to measure along the seven dimensions of self perception. The adjective pairs are arranged in the questionnaire in a new random order and are applied to two concepts, 'Myself as a teacher' and 'The teacher I would like to be'. A sample set of instructions for the semantic differential is included. This questionnaire may be used, as presented, in studies of professional socialization of beginning

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teachers or may be extended by including the global concepts, 'Myself' and 'Myself as I would like to be'.

The questionnaire may be scored by calculating seven unweighted sums of the scores on the individual adjective pairs which comprise the separate scales. These items were identified in Table 4. An appropriate method of scoring would involve locating in the questionnaire those items which comprise a particular scale. Consider, for example, the Satisfaction scale. Table 4 shows the items which comprise the scale and may be used as well to identify those items which have been reversed in constructing the questionnaire. In the Satisfaction scale the 'contented-discontented' pair was reversed. A common method of scoring a semantic differential is to assign scores of 7 through 1 to the 'positive' through 'negative' points on the continuum, alternatively 3 through -3 might be used. Thus, continuing the example, successive scale points on the 'satisfied-dissatisfied' and 'fulfilled-frustrated' items would be assigned scores of 7 through 1 whilst successive scale points on the 'discontented-contented' item would be assigned scores of 1 through 7. The three scores would then be summed to form the raw scale score. If found convenient separate templates might be constructed to score the seven factors.

It is recommended that, at present, the scales be used only for research purposes in hypothesis testing and evaluation studies. The reliabilities achieved for the scales are not high enough to support their use for individual measurement. Consequently, tables of norms have not been presented for the scales.

The scales have been recently used in Canada and Australia to evaluate the impact of initial teaching experience upon

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professional self image in student teachers. In British Columbia, Gregory (1976) used the instrument in an evaluative study of the Simon Fraser University teacher education program. From an analysis of the responses to the thirty-two scales by his Canadian students, Gregory obtained the same seven factor solution as the one presented in this report. This provided some evidence that the factor structure described in this report is stable across different groups of student teachers in widely separated geographic areas. Gregory also reported that generally the students maintained a positive professional self view after initial practice teaching experience. The maintenance of positive self attitudes was interpreted by Gregory as one index of the program's effectiveness in inducting student teachers into the classroom teaching situation.

The instrument has also been used by the authors in an evaluative study of teacher education programs in Australia. In that study a large sample of student teachers in eight institutions was asked to rate two concepts at the beginning and end of the initial practice teaching year. The concepts were 'The teacher I would like to be' and 'Myself as a teacher'. The discrepancy between aspirational and actual self perception provided an index of professional adjustment, or a general measure of the extent to which students saw themselves as frustrated or fulfilled on each dimension of professional behaviour measured. To the extent that student teachers saw themselves as competent, effective and as realizing their aspirations, programs might be judged as effective. Of course the question which arises is whether the student teachers' self perceptions bore any relationship to their actual classroom behaviour. A program could hardly be judged effective if it encouraged wildly inaccurate professional self perceptions, no matter how euphoric the process might be for the

students. For a sub-sample of forty student teachers a check was made on the relationships between the seven dimensions of self perception and corresponding dimensions of actual classroom behaviour (Coulter and Elsworth, 1977). Lessons were observed for each of the forty students on two occasions. A trained observer's ratings on the dimensions of classroom behaviour described by Emmer (1970) were correlated with self perception scores recorded at the end of each of the lessons. The correlations (Appendix 5) were in most cases significant, indicating that student teachers' perceptions of their behaviour as measured by the present scales were related to observed behaviour.

A further study (Coulter and Elsworth, 1976) investigated the relationship between student teachers' personality and self perception. The analyses supported the general proposition that more flexible, socially introverted, and anxious student teachers would see themselves in less positive professional terms than would their more rigid, socially extroverted and low anxious peers.. To the extent that the present instrument was able to discriminate between the professional self perceptions of these various personality groups, its validity was further supported.

A related study (Elsworth and Coulter, 1976) employed the instrument to investigate the relationship between professional commitment and self perception. Commitment was defined in terms of the value attributed by the student teacher to the activities of teaching. Change in professional commitment and change in self perception were dynamically interrelated. As student teachers became more or less committed, so did they begin to see themselves in more or less positive terms in their professional role. This suggested that commitment at the beginning of the teacher education program was a poorer

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predictor of the student teacher's ultimate adjustment than was *change* in commitment during the program. In this sense the quality of training experiences provided may be more critical to professional adjustment than are students' initial attitudes toward teaching.

These studies have been reported briefly to illustrate the purposes which the present scales may serve. They also provide some evidence of the stability of the factor structure and further support for the instrument's validity.

APPENDICES

APPENDIX 1

The Original Semantic Differential

Myself as a teacher

sure								shifting	C
conforming								non-conforming	C-O
vague								clear	C
puzzling								informing	C
lucid								obscure	C
blurry								sharp	C
insulting								esteeming	Cr
warm								cool	W
dull								stimulating	E
satisfied								dissatisfied	S
inflexible								flexible	Fl
comforting								reproaching	Cr
restrained								liberated	Fl
aloof								intimate	W
encouraging								discouraging	Cr
yielding								unyielding	Fl
sensitive								insensitive	W
systematic								random	Th
intolerant								tolerant	Cr
inert								energetic	E
cheerful								solemn	S
shallow								deep	S
fulfilled								frustrated	S
usual								unusual	C-O
indifferent								eager	E
friendly								hostile	W
comprehensible								incomprehensible	C

jumbled								arranged	Th
fresh								stale	C-0
limited								unlimited	Fl
enthusiastic								unenthusiastic	E
mean								kind	W
accepting								rejecting	Cr
rewarding								punishing	Cr
purposeless								purposeful	Th
discontented								contented	S
chaotic								orderly	Th
varied								constant	Fl
free								constrained	Fl
stereotyped								original	C-0
wavering								certain	C
strange								familiar	S
adaptable								rigid	Fl
imaginative								unimaginative	C-0
prepared								unprepared	Th
conventional								unconventional	C-0
sad								happy	S
creative								uncreative	C-0
condemning								praising	Cr
animated								lifeless	E
unchallenging								challenging	E
disorganized								organized	Th
full								empty	S
close								distant	W
spirited								apathetic	E
efficient								inefficient	Th

KEY: C: Clarity. C-O: Creativity-Originality. Cr: Criticism. Fl: Flexibility.
W: Warmth. E: Enthusiasm. Th: Thrust S: Satisfaction.

APPENDIX 2

Mean scores for seven dimensions of self perception according to concepts and sub-groups of respondents (N = 396)

Dimension of Self Concept	Sub-group of Respondents	CONCEPT: Myself $\bar{x}$	Myself SD	Myself as I would like to be $\bar{x}$	Myself as I would like to be SD	Myself as a teacher $\bar{x}$	Myself as a teacher SD	The teacher I would like to be $\bar{x}$	The teacher I would like to be SD
Creativity	Prim. Males	15.58	3.44	19.59	2.00	15.36	3.46	19.97	1.25
	Prim. Females	15.75	3.18	19.79	1.90	15.72	3.00	20.12	1.56
	Sec. Males	15.91	2.99	19.35	2.50	15.74	3.02	19.32	2.45
	Sec. Females	16.30	3.19	19.85	1.74	15.75	3.16	20.20	1.30
Orderliness	Prim. Males	28.99	6.88	35.87	5.42	31.29	6.04	37.55	4.16
	Prim. Females	30.73	7.52	36.65	5.15	32.87	5.58	38.56	3.46
	Sec. Males	30.42	7.24	36.15	5.11	31.52	6.54	37.27	5.13
	Sec. Females	31.33	7.22	36.68	4.60	32.30	5.58	38.44	3.11
Warmth-Supportiveness	Prim. Males	31.94	4.96	36.49	3.78	33.21	4.48	37.00	3.44
	Prim. Females	34.00	4.17	38.05	3.79	34.75	4.09	38.56	3.26
	Sec. Males	31.09	5.25	34.92	5.38	32.16	5.18	34.04	5.09
	Sec. Females	34.10	5.02	37.79	3.17	33.93	5.04	37.38	3.72
Satisfaction	Prim. Males	13.74	4.50	19.32	2.25	13.45	4.60	19.57	1.75
	Prim. Females	14.04	4.63	19.84	1.98	13.07	4.70	19.58	2.67
	Sec. Males	14.26	4.57	19.29	2.62	14.19	4.86	19.59	2.48
	Sec. Females	14.35	4.71	19.72	1.98	12.68	4.92	19.53	2.18
Clarity	Prim. Males	19.08	4.19	23.82	3.82	20.83	3.67	25.42	2.14
	Prim. Females	20.20	3.36	24.15	2.86	21.20	2.90	25.27	2.35
	Sec. Males	19.49	4.21	24.09	3.35	20.52	4.12	24.82	2.70
	Sec. Females	18.83	5.05	23.15	3.17	19.84	4.45	24.89	2.66

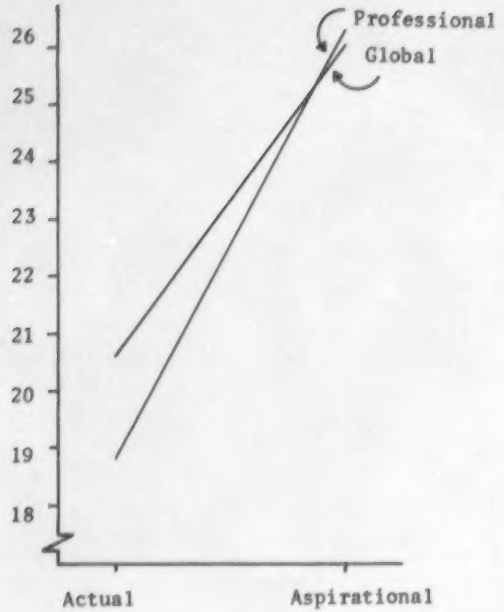
Energy-Enthusiasm	Prim. Males	27.34	4.56	32.47	3.11	27.48	4.90	33.15	2.25
	Prim. Females	27.78	4.17	32.65	3.06	28.02	4.60	33.45	2.05
	Sec. Males	27.19	4.71	31.79	3.50	27.66	4.54	32.19	3.39
	Sec. Females	28.15	4.52	32.83	2.33	27.67	4.88	33.23	1.98
Non-conformity	Prim. Males	21.52	5.48	27.08	4.39	19.73	5.82	27.08	4.37
	Prim. Females	19.23	5.25	25.76	4.70	18.03	4.97	26.28	4.71
	Sec. Males	21.91	5.39	25.44	5.41	19.79	5.50	25.89	5.17
	Sec. Females	20.14	5.31	26.32	4.65	17.83	5.47	25.58	4.81

APPENDIX 3

Analysis of variance of non-conformity scores on four aspects of self perception

Source of Variation		Multivariate Analysis (4,389 d.f.) F	p	Univariate df	Univariate Analysis F	p
Constant				1		
Constant					-	-
Aspect		3722.39	<.0001		933.62	<.0001
Role					25.87	<.0001
Aspect x Role					35.14	<.0001
Sex				1		
Between Sexes	Eliminating	4.96	.0007		9.02	.0029
Sex x Aspect	effects in				11.46	.0008
Sex x Role	Constant and				0.01	.93
Sex x Aspect x Role	Level groups				0.52	.47
Level				1		
Between Levels	Eliminating	2.84	.02		0.29	.59
Level x Aspect	effects in				5.55	.02
Level x Role	Constant and				2.97	.09
Level x Aspect x Role	Sex groups				0.21	.64
Sex x Level				1		
Sex x Level	Eliminating	1.95	.10		0.80	.37
Sex x Level x Aspect	effects in				2.00	.16
Sex x Level x Role	all other				3.51	.06
Sex x Level x Aspect x Role	groups				0.52	.47
Within Groups				392		
Total				N = 396		

APPENDIX 3.1



Concept *Aspect* x concept *Role* interaction for the dependent variable Non-conformity. Appropriate combined means were:

Actual - Global	20.60
Actual - Professional	18.82
Aspirational - Global	26.16
Aspirational - Professional	26.27

APPENDIX 4

THE PROFESSIONAL SELF PERCEPTION QUESTIONNAIRE

QUESTIONNAIRE FOR STUDENT TEACHERS

In this questionnaire, you are asked to judge certain self concepts against a series of descriptive scales. There are three pages in the questionnaire. At the top of the next two pages you will find a different concept and beneath it a set of descriptive scales.

You are asked to rate yourself on the seven point scale as indicated. Firstly decide which side of the scale better describes you and then decide to what extent you see yourself in that way.

If you feel that you are very relaxed you might place your check mark as follows:

tense ___ : ___ : ___ : ___ : ___ : ___ : X relaxed

If you feel that you are rather tense you might check as follows:

tense ___ : X : ___ : ___ : ___ : ___ : ___ relaxed

If you feel that you are only slightly tense as opposed to relaxed you might check as follows:

tense ___ : ___ : X : ___ : ___ : ___ : ___ relaxed

If you consider that you are neutral on the scale or that the scale is completely irrelevant to you, check the middle space on the scale:

tense ___ : ___ : ___ : X : ___ : ___ : ___ relaxed

But please use this middle point as infrequently as possible.

OTHER POINTS TO NOTE

+ Place your crosses in the middle of the spaces

Like this

X : ___ : ___ : ___ : ___ : ___ :

Not like this

X
:

+ Do not hesitate to use extreme ends of the scale whenever these seem appropriate.

+ Work as quickly as possible for it is your spontaneous response that is wanted. Do not take too long on any one rating. On the other hand, please do not be careless as it is your true impression that is wanted.

+ Please be sure you mark every scale for each concept – do not omit any.

MYSELF AS A TEACHER

warm	____:____:____:____:____:____:____	cool
chaotic	____:____:____:____:____:____:____	orderly
comforting	____:____:____:____:____:____:____	reproaching
friendly	____:____:____:____:____:____:____	hostile
free	____:____:____:____:____:____:____	constrained
spirited	____:____:____:____:____:____:____	apathetic
lucid	____:____:____:____:____:____:____	obscure
systematic	____:____:____:____:____:____:____	random
insulting	____:____:____:____:____:____:____	esteeming
creative	____:____:____:____:____:____:____	uncreative
disorganized	____:____:____:____:____:____:____	organized
conventional	____:____:____:____:____:____:____	unconventional
indifferent	____:____:____:____:____:____:____	eager
satisfied	____:____:____:____:____:____:____	dissatisfied
vague	____:____:____:____:____:____:____	clear
prepared	____:____:____:____:____:____:____	unprepared
jumbled	____:____:____:____:____:____:____	arranged
puzzling	____:____:____:____:____:____:____	informing
restrained	____:____:____:____:____:____:____	liberated
blurry	____:____:____:____:____:____:____	sharp
fresh	____:____:____:____:____:____:____	stale
mean	____:____:____:____:____:____:____	kind
adaptable	____:____:____:____:____:____:____	rigid
enthusiastic	____:____:____:____:____:____:____	unenthusiastic
inert	____:____:____:____:____:____:____	energetic
usual	____:____:____:____:____:____:____	unusual
imaginative	____:____:____:____:____:____:____	unimaginative
efficient	____:____:____:____:____:____:____	inefficient
discontented	____:____:____:____:____:____:____	contented
conforming	____:____:____:____:____:____:____	non-conforming
rewarding	____:____:____:____:____:____:____	punishing
fulfilled	____:____:____:____:____:____:____	frustrated

THE TEACHER I WOULD LIKE TO BE

warm	____:____:____:____:____:____:____	cool
chaotic	____:____:____:____:____:____:____	orderly
comforting	____:____:____:____:____:____:____	reproaching
friendly	____:____:____:____:____:____:____	hostile
free	____:____:____:____:____:____:____	constrained
spirited	____:____:____:____:____:____:____	apathetic
lucid	____:____:____:____:____:____:____	obscure
systematic	____:____:____:____:____:____:____	random
insulting	____:____:____:____:____:____:____	esteeming
creative	____:____:____:____:____:____:____	uncreative
disorganized	____:____:____:____:____:____:____	organized
conventional	____:____:____:____:____:____:____	unconventional
indifferent	____:____:____:____:____:____:____	eager
satisfied	____:____:____:____:____:____:____	dissatisfied
vague	____:____:____:____:____:____:____	clear
prepared	____:____:____:____:____:____:____	unprepared
jumbled	____:____:____:____:____:____:____	arranged
puzzling	____:____:____:____:____:____:____	informing
restrained	____:____:____:____:____:____:____	liberated
blurry	____:____:____:____:____:____:____	sharp
fresh	____:____:____:____:____:____:____	stale
mean	____:____:____:____:____:____:____	kind
adaptable	____:____:____:____:____:____:____	rigid
enthusiastic	____:____:____:____:____:____:____	unenthusiastic
inert	____:____:____:____:____:____:____	energetic
usual	____:____:____:____:____:____:____	unusual
imaginative	____:____:____:____:____:____:____	unimaginative
efficient	____:____:____:____:____:____:____	inefficient
discontented	____:____:____:____:____:____:____	contented
conforming	____:____:____:____:____:____:____	non-conforming
rewarding	____:____:____:____:____:____:____	punishing
fulfilled	____:____:____:____:____:____:____	frustrated

APPENDIX 5

Relationships Between Observed Teaching Behaviours and Comparable Dimensions of Professional Self Perception (N = 40)

Dimension of 'State' Self Perception	Observed Teaching Behaviour	r First Observation	r Second Observation
Orderliness	Convergent-evaluative interaction	0.29	0.31*
Orderliness	Task orientation	0.32*	0.50**
Orderliness	Clarity	0.31*	0.43**
Warmth	Positive affect	0.53**	0.41**
Warmth	Negative affect	-0.36*	-0.36*
Clarity	Clarity	0.25	0.14
Energy	Enthusiasm	0.36*	0.40*
Non-conformity	Pupil-to-Pupil interaction	0.34*	0.42**
Non-conformity	Teacher presentation	-0.14	-0.22
Non-conformity	Convergent-evaluative interaction	-0.36*	-0.16

* p.<0.05, one-tailed test

** p.<0.01, one-tailed test

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This monograph reports the development of a semantic differential designed to measure professional self perception in student teachers. The semantic differential is composed of seven scales which were identified by the factor analysis of the responses of 396 student teachers to 56 adjectival pairs when used to rate the concepts 'Myself', 'Myself as I would like to be', 'Myself as a teacher' and 'The teacher I would like to be'. The seven scales measure self perception along the dimensions of Creativity, Orderliness, Warmth-Supportiveness, Satisfaction, Clarity, Energy-Enthusiasm and Non-Conformity.

The selection of items for the scales involved consideration of possible concept-scale and subject-scale interactions. Reliability estimates are reported and construct validity is examined from the viewpoint of predicted systematic differences in self perception between male and female student teachers, and primary and secondary student teachers. Examples of the use of the scales in evaluative research in teacher education are described.

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